

wherein the ring switch switches data packets between its ring and local ports to direct the data packets to specified network devices associated with the at least one local port of the ring switches in the ring network; and

wherein the ports of the ring switches are configured such that data packets received at the at least one ring port and the at least one local port that are not destined for a network device associated with the at least one local port of the ring switch are switched to another ring switch on the ring network based on the at least one address table without the use of a token or encapsulating the packet.

53. (NEW) The ring network of claim 52, wherein the ring switches each include a ring-in and a ring-out port.

54. (NEW) The ring network of claim 53, wherein the ring switches are adapted to store source addresses for data packets received at the ring-in port of a ring switch in the at least one address table with an indication that data packets destined for the source address should be transmitted out the ring-out port of the ring switch.

55. (NEW) The ring network of claim 52, wherein the ring switches each include a single, bi-directional ring port that allows data packets received at the bi-directional ring port to be retransmitted out the ring port of the switch so that data packets can be forwarded on to other ring switches in the ring network without the use of a token or encapsulating the data packets.

56. (NEW) The ring network of claim 52, and further including a number of ring transceivers coupled to form a ring, wherein the ring switches are coupled to the ring transceivers.

57. (NEW) The ring network of claim 52, wherein the ring switches are coupled by conductors on a printed circuit board.

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58. (NEW) The ring network of claim 52, wherein the at least one local port for at least one of the ring switches includes at least one of a token ring port, an Ethernet port, and a Fiber Distributed Data Interface (FDDI) port.

59. (NEW) The ring network of claim 52, wherein the at least one local port for at least one of the ring switches includes at least one of a data transfer path and a PLI interface.

60. (NEW) The ring network of claim 52, wherein the ring switches each include a single address table for-identifying the addresses of network devices associated with the at least one ring port and the at least one local port of the ring switch.

61. (NEW) A ring network comprising:

multiple ring switches, each ring switch having at least one ring port and at least one local port;

each ring switch having at least one address table that is adapted to self learn which network devices are associated with each port of the ring switch based on source addresses of data packets processed by the ring switch; and

wherein data packets received at a ring port that are not destined for a network device associated with a local port of the ring switch are switched to another ring switch based on the at least one address table without the use of a token or encapsulating the data packet.

62. (NEW) The ring network of claim 61, wherein the ring switches each include a ring-in and a ring-out port.

63. (NEW) The ring network of claim 62, wherein the ring switches are adapted to store source addresses for data packets received at the ring-in port of a ring switch in the at

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least one address table with an indication that data packets destined for the source address should be transmitted out the ring-out port of the ring switch.

64. (NEW) The ring network of claim 61, wherein the ring switches each include a single, bi-directional ring port that allows data packets received at the bi-directional ring port to be retransmitted out the ring port of the switch so that data packets can be forwarded on to other ring switches in the ring network without the use of a token or encapsulating the data packets.

65. (NEW) The ring network of claim 61, wherein the ring switches are coupled by conductors on a printed circuit board.

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66. (NEW) The ring network of claim 61, wherein the at least one local port for at least one of the ring switches includes at least one of a token ring port, an Ethernet port, and a Fiber Distributed Data Interface (FDDI) port.

67. (NEW) A ring switch for a ring network, the ring switch comprising:

- at least one ring port that is coupleable to transport data packets in a ring network;
- at least one local port that is coupleable to at least one local area network or device;

- at least one address table that is adapted to track the addresses of network devices associated with each port of the ring switch based on source addresses of data packets received at the ports of the ring switch; and

- wherein data packets received at the at least one ring port that are not destined for a network device associated with any of the at least one local ports of the ring switch are switched to another ring switch coupled to the at least one ring port based on the at least one address table without the use of a token or encapsulating the packet.

68. (NEW) The ring switch of claim 67, wherein the ring switch includes a circuit that is adapted to use the source address of data packets entering a ring-in port to create entries in the at least one address table for a ring-out port for use in switching data packets.

69. (NEW) The ring switch of claim 67, wherein the at least one ring port of the ring switch comprises a single, bi-directional ring port that allows data packets received at the ring port to be retransmitted out of the ring port to other ring switches.

70. (NEW) The ring switch of claim 67, wherein the at least one local port for the ring switch includes at least one of a token ring port, an Ethernet port, and a Fiber Distributed Data Interface (FDDI) port.

71. (NEW) A ring switch for a ring network, the ring switch comprising:

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a bi-directional ring port that is coupleable to receive data packets from and transmit data packets over a ring of ring switches;

at least one local port that is coupleable to at least one local area network;

at least one address table that is adapted to self learn and store the addresses of network devices associated with the at least one bi-directional ring port and the at least one local port based on source addresses from data packets processed by the ring switch; and

wherein the ring switch allows data packets received at the ring port to be retransmitted out the ring port of the switch so that data packets can be forwarded on to other ring switches in the ring network based on the at least one address table without the use of a token or encapsulating the packet.

72. (NEW) The ring switch of claim 71, wherein at least one of the at least one local ports is configured as a token ring port, an Ethernet port, and a Fiber Distributed Data Interface (FDDI) port.

73. (NEW) A ring switch for a ring network, the ring switch comprising:

- a ring-in port that is coupleable to receive data packets from the ring network;
- a ring-out port that is coupleable to provide data packets to the ring network;
- at least one local port that is coupleable to a local area network;
- at least one address table that is adapted to track the addresses of network devices associated with the ports of the ring switch; and

wherein the address table is adapted to associate the addresses of network devices with the ring-out port when data packets are received at the ring-in port.

74. (NEW) The ring switch of claim 73, wherein the at least one local port includes a local port configured as a token ring port, an Ethernet port, and a Fiber Distributed Data Interface (FDDI) port.

75. (NEW) A method for processing data packets in a ring switch of a ring network, the method comprising:

- placing data packets on the ring network;
- selectively modifying at least one table in each ring switch to identify network devices associated with each port of the ring switch when data packets having unknown source identifier are processed;

- selectively switching the data packets around the ring network by comparing a destination identifier in the data packets with the at least one table; and

- removing data packets from the ring at a local port of the ring switch when a destination identifier in the data packets indicate that the destination network device is located on a local port of the ring switch.

76. (NEW) The method of claim 75, wherein switching the data packets around is done without use of a token or encapsulating the data packets.

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77. (NEW) A method for processing data packets in a ring switch of a ring network, the method comprising:

receiving a data packet at a bi-directional ring port of the ring switch;

reading the source address of the data packet;

when the source address is not in an address table for a port of the ring switch, storing the source address in at least one address table with an indication that the address is for a network device associated with the ring port;

reading a destination address from the data packet; and

when the destination address for the data packet is in an address table for the ring switch, switching the data packet to the port of the ring switch that is associated with the destination address, even if the data packet was received at the ring port and the destination address is associated with the ring port without using a token or encapsulating the data packet.

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78. (NEW) The method of claim 77, and further comprising the step of broadcasting the data packet to all ports of the ring switch when the destination address for the data packet is not in an address table for the ring switch or the data packet is a broadcast data packet.

79. (NEW) The method of claim 77, and further comprising the step of broadcasting the data packet to all appropriate ports of the ring switch when the destination address for the data packet is a multicast address.

80. (NEW) A method of routing signals in a network, the method comprising:

placing data packets on a ring network that includes ring switches that each are adapted to self learn the location of network devices associated with the network as packets with unknown source addresses are processed by the ring switches; and

selectively switching the data packets around and off the ring network based on identifiers of the data packets that identify a destination network of the system.